Author Index (Vol. 105, 1958)

Achey, F. A. and Serfass, E. J.—New Approach to the Measurement of Coating Thickness by Fluorescent X-Ray Absorption 204
Adams, G. B., Jr., *et al.*—Anodic Oxide Film Formation on Zirconium Kinetics with and without Concurrent Oxygen Evolution 660
Adams, W. H., *et al.*—Methods for Preparing Pure Scandium Oxide 683
Albrecht, W. M., and Mallett, M. W.—Reaction of Hydrogen with Uranium 610
Albrecht, W. M., *et al.*—Equilibria in the Niobium-Hydrogen System 219
Albrecht, W. M., *et al.*—Equilibria in the Niobium-Hydrogen System (D) 756
Allen, M. J.—Letter to Editor 179C
Allen, M. J., and Powell, V. J.—Anodic Polarography with a Rotating Platinum Microelectrode, II. Oxidation of Various Indole Alkaloids 541
Allred, W. P., *et al.*—Preparation and Some Characteristics of Single-Crystal Indium Phosphide 731
Allred, W. P., *et al.*—Zone Melting and Crystal Pulling Experiments with AlSb 93
Andrew, K. F., and Gulbransen, E. A.—High Temperature Oxidation of High Purity Nickel between 750° and 1050°C (D) 363
Andrew, K. F., and Gulbransen, E. A.—Oxidation of Niobium between 375°C and 700°C 4
Angstadt, R. T., and Rüetschi, P.—Self-Discharge Reactions in Lead-Acid Batteries 555
Apple, E. F.—Investigations in the $CuGaS_2$-ZnS and $AgGaS_2$-ZnS Systems 251
Archer, R. J.—Optical Measurement of Film Growth on Silicon and Germanium Surfaces in Room Air (D) 365
Arranaga, A. B., and Jones, J. L.—New Zinc-Iodate Primary Battery 435
Atkinson, J. T. N.—Acid Copper Plating on Aluminum 24
Aven, M. H., and Potter, R. M.—Luminescence of Self-Coactivated ZnS: Cu 134
Aziz, P. M., and Godard, H. P.—Influence of Surface Pretreatment on the Atmospheric Oxidation of 2S (U. S. Alloy 1100) Aluminum (D) 367
Bakish, R.—Metallographic Manifestations of the Air Oxidation of Tantalum at 750°C 71
Bakish, R.—Report on the Second Congress of the European Corrosion Federation, Frankfort, June 5-8, 1958 ..... 209C
Bakish, R.—Some Observations on the Effect of the Interaction of Tantalum with Oxygen, Nitrogen, and Hydrogen 574
Bartlett, J. H. and Cooper, R. S.—Convection and Film Instability; Copper Anodes in Hydrochloric Acid 109
Beck, A. F., *et al.*—Study of the Effect of Chloride Ion on Films Formed on Iron in Sodium Nitrite Solutions 332
Beck, A. F., *et al.*—Cathodic Reduction of Oxide Films on Iron, II. Determination of α-Fe_2O_3 and Fe_3O_4 74
Beer, A. C.—Semiconducting Compounds—A Challenge in Applied and Basic Research 743
Bemski, G., and Struthers, J. D.—Gold in Silicon 588
Benn, D. R., and Silverman, S. J.—Junction Delineation in Silicon by Gold Chemiplating 170
Bertocci, U., *et al.*—(D) 752
Black, J., *et al.*—Some Semiconducting Properties of HgTe 723
Blocher, J. M., Jr., and Hall, E. H.—Heat of Formation of Titanium Tribromide by the Mercury Reduction of Titanium Tetrabromide 40
Blocher, J. M., Jr., *et al.*—Vapor Pressure of Titanium Tetrabromide 271
Blocher, J. M., Jr., *et al.*—Vapor Pressure of Titanium Tetrafluoride 275
Böckman, O. C., and Wleügel, J.—Electromagnetic Forces in Large Aluminum Furnaces 417
Bockris, J. O'M., *et al.*—Hydrogen Evolution Reaction on Copper, Gold, Molybdenum, Palladium, Rhodium, and Iron; Mechanism and Measurement Technique under High Purity Conditions (D) 752
Bode, H. (D) 361
Boswell, T. L.—Indium as an Anode Material 239
Brasher, D. M., and De, C. P. (D) 755
Brenner, A.—Visit to Moscow 228C
Brenner, A., and Sherfey, J. M.—Electrochemical Calorimetry 665
Brenner, A., and Yannakopoulos, T.—Isolation of the Diffusion Layer at an Electrode and the Determination of Concentration Polarization 521
Brenner, A., *et al.*—Protection of Molybdenum from Oxidation at Elevated Temperatures 450
Brenner, A., *et al.*—Use of Nickel-Aluminum Alloy Coatings for the Protection of Molybdenum from Oxidation 485
Buck, T. M., and McKim, F. S.—Effects of Certain Chemical Treatments and Ambient Atmospheres on Surface Properties of Silicon 709
Buob, K. H., *et al.*—Cathodic Reduction of Oxide Films on Iron, II. Determination of α-Fe_2O_3 and Fe_3O_4 74
Burbank, J. (D) 360
Burns, L. R., and Schram, A. F.—Effect of Amines on Polarization of Iron Electrodes 241
Butler, T. J., and Davis, R. T., Jr.—Reduction of Passive Films by Hydrogen Diffusion through Steel 563
Byrne, J. T., *et al.*—Destruction of Cyanide Wastes by Electrolytic Chlorination 607

Cahan, B. D., and Rüetschi, P.—Anodic Corrosion and Hydrogen and Oxygen Overvoltage on Lead and Lead Antimony Alloys (D) 360
Cahan, B. D., and Rüetschi, P.—Electrochemical Properties of PbO_2 and the Anodic Corrosion of Lead and Lead Alloys 369
Cahoon, N. C., and Korver, M. P.—Film Lining for High-Capacity Dry Cells 293
Cahoon, N. C., *et al.*—Cathode Reactions in the Leclanche Dry Cell 296
Campbell, I. E., *et al.*—Vapor Pressure of Titanium Tetrabromide 271
Campbell, I. E., *et al.*—Vapor Pressure of Titanium Tetrafluoride 275
Campbell, J. J., *et al.*—Microtopography of Oxide Films on Niobium 442
Campbell, J. U., *et al.*—Iron and Phosphate Slag from Byproduct Ferrophosphorus 148
Carlin, F. X., *et al.*—Protective Value of Tin-Nickel Alloy Deposits on Steel 338
Case, L. O., and Krohn, A.—Electrodeposition of Iron-Molybdenum Alloys 512
Casey, E. J., and Lake, P. E.—Anodic Oxidation of Cadmium, I. Mechanism of Film Formation 52
Cathcart, J. V., *et al.*—Microtopography of Oxide Films on Niobium 442
Champion, F. A. (D) 755
Clark, W. E.—Effect of Gamma Ir-

(D) Indicates Discussion
(E) Indicates Editorial

PAGES IN EACH ISSUE (Vol. 105, 1958)

Month	Technical	Nontechnical
January	1- 58	1C- 14C
February	59-108	15C- 30C
March	109-178	31C- 68C
April	179-238	69C- 88C
May	239-288	89C-102C
June	289-368	103C-114C
July	369-434	115C-140C
August	435-486	141C-180C
September	487-552	181C-202C
October	553-612	203C-222C
November	613-694	223C-244C
December	695-762	245C-264C

radiation on the Potential Behavior of Platinum and Stainless Steel Electrodes 483
Cline, J. E., and Seed, R. G.—Diffusion into Silicon from Glassy Layers 700
Cohen, M., and Hoey, G. R.—Corrosion of Anodically and Cathodically Polarized Magnesium in Aqueous Media 245
Cohen, M., and Hoey, G. R.—Corrosion of Anodically and Cathodically Polarized Magnesium in Aqueous Media (D) 757
Cohen, M., *et al.*—Study of the Effect of Chloride Ion on Films Formed on Iron in Sodium Nitrite Solutions 332
Cohen, M., *et al.*—Cathodic Reduction of Oxide Films on Iron, II. Determination of α-Fe_2O_3 and Fe_3O_4 74
Cole, J. C., and MacMullin, R. B.—Report of the Chlor-Alkali Committee of the Industrial Electrolytic Division for the Year 1957 550
Colner, W. H., and Francis, H. T.—Contribution to the Theory of Stress Corrosion in Al-4% Cu Alloys 377
Comenetz, G., and Salatka, J. W.—Ten-Gram Levitation-Melted Ingots 673
Convey, J.—September 28-October 2, 1958 (*E*) 184C
Cooper, R. S.—Schlieren Studies of Concentration Gradients at a Cu|HCl Anode 506
Cooper, R. S., and Bartlett, J. H.—Convection and Film Instability; Copper Anodes in Hydrochloric Acid 109
Corsaro, G., *et al.*—Kinetics of the Thiosulfate-Bromoacetate Reaction in the Presence of Electrolytes 229
Couch, D. E., *et al.*—Protection of Molybdenum from Oxidation at Elevated Temperatures 450
Couch, D. E., *et al.*—Use of Nickel-Aluminum Alloy Coatings for the Protection of Molybdenum from Oxidation 485
Cretella, M. C., and Gatos, H. C.—Reaction of Germanium with Nitric Acid Solutions, I. The Dissolution Reaction 487
Cretella, M. C., and Gatos, H. C.—Reaction of Germanium with Nitric Acid Solutions, II. Passivity of Germanium 492

Daane, A. H., *et al.*—Methods for Preparing Pure Scandium Oxide 683
Davenport, W. H., *et al.*—Investigation of Chemical Variables Affecting the Corrosion of Copper 569
Davies, M. O. (D) 359
Davis, R. T., Jr., and Butler, T. J.—Reduction of Passive Films by Hydrogen Diffusion through Steel 563
De, C. P., and Brasher, D. M. (D) 755
Dearing, B. E., and Niedrach, L. W.—Preparation of Uranium Metal by the Electrolytic Reduction of Its Oxides 353
deBethune, A. J. (D) 359
deBethune, A. J.—Letter to Editor 213C
De Haan, F., and Dirkse, T. P.—Corrosion of the Zinc Electrode in the Silver-Zinc-Alkali Cell 311
DeLaRue, R. E., and Eisenberg, M.—Anodic Polarization of Titanium in Nonaqueous Base Etching Solutions 162
Denaro, A. R., and Hickling, A.—Glow-Discharge Electrolysis in Aqueous Solutions 265
Derick, L., and Frosch, C. J.—Diffusion Control in Silicon by Carrier Gas Composition 695
de Zoubov, N., *et al.*—Potential-pH Diagram of the Antimony-Water System; Its Applications to Properties of the Metal, Its Compounds, Its Corrosion, and Antimony Electrodes (D) 365
Dirkse, T. P., and De Haan, F.—Corrosion of the Zinc Electrode in the Silver-Zinc-Alkali Cell 311
Dittmann, J. F., and Sams, J. F.—Lead-Acid Storage Batteries; Changes in Positive Active Material Density during Various Conditions of Service 553
Draganov, S. M., *et al.*—Anodic Oxide Film Formation on Zirconium Kinetics with and without Concurrent Oxygen Evolution 660
Dravnieks, A., and Samans, C. H.—Kinetics of Reaction of Steel with Hydrogen Sulfide-Hydrogen Mixtures 183
Dudding, R. W., and Finnett, D. J.—Surface Phenomena Associated with Application of Organic Films to Phosphor Screens 388
Duke, F. R., and Fleming, R. A.—Equivalent Conductivities of $AgNO_3$-KNO_3 Mixtures 412
Duke, F. R., and Laity, R. W.—Transport Numbers in Pure Fused Salts; Lead Chloride, Lead Bromide, Thallous Chloride, and Silver Nitrate 97
Duke, F. R., and Owens, B.—Mobilities of the Ions in Fused KNO_3-$AgNO_3$ Mixtures 476
Duke, F. R., and Owens, B.—Transport Numbers of the Pure Fused Salts, $LiNO_3$, $NaNO_3$, KNO_3, and $AgNO_3$ 548

Eisenberg, M., and DeLaRue, R. E.—Anodic Polarization of Titanium in Nonaqueous Base Etching Solutions 162
El Wakkad, S. E. S., *et al.*—Anodic Oxidation of Zinc and Zinc-Tin Alloys at Very Low Current Density 47
Ernst, D. W., and Holt, M. L.—Cathode Potentials during the Electrodeposition of Molybdenum Alloys from Aqueous Solutions 686

Fahrig, R. H., and Medcalf, W. E.—High-Pressure, High-Temperature Growth of Cadmium Sulfide Crystals 719
Felmayer, W., and Wolf, I.—Conductivity and Energy Gap Measurements of Some Relatives of Phthalocyanine 141
Finnett, D. J., and Dudding, R. W.—Surface Phenomena Associated with Application of Organic Films to Phosphor Screens 388
Fiorito, L., and Hazel, J. F.—Sedimentation Volumes of a Phosphor Powder in Potassium Silicate and Potassium Silicate-Barium Acetate Settling Medium 57
Fischer, W. H.—Effect of Temperature and Thickness on the Electrical Resistivity of Ceramic Coatings 201
Fleming, R. A., and Duke, F. R.—Equivalent Conductivites of $AgNO_3$-KNO_3 Mixtures 412
Flynn, J. B.—Saturation Currents in Germanium and Silicon Electrodes 715
Francis, H. T., and Colner, W. H.—Contribution to the Theory of Stress Corrosion in Al-4% Cu Alloys 377
Frosch, C. J., and Derick, L.—Diffusion Control in Silicon by Carrier Gas Composition 695

Gardiner, W. C.—Good Campers (*E*) 143C
Gatos, H. C., and Cretella, M. C.—Reaction of Germanium with Nitric Acid Solutions, I. The Dissolution Reaction 487
Gatos, H. C., and Cretella, M. C.—Reaction of Germanium with Nitric Acid Solutions, II. Passivity of Germanium 492
Gatos, H. C., and Harvey, W. W.—Reaction of Germanium with Aqueous Solutions, I. Dissolved Kinetics in Water Containing Dissolved Oxygen 654
Genco, J. I., *et al.*—Preparation and Some Characteristics of Single-Crystal Indium Phosphide 731
Genser, M., *et al.*—Zone Melting and Crystal Pulling Experiments with AlSb 93
Gillespie, A. S., Jr., *et al.*—Electrochemical Measurement of Oxide Formation 408
Glicksman, M., and Weiser, K.—Electron Mobility in InP 728
Glicksman, R., and Morehouse, C. K.—Dry Cells Containing Various Aromatic C-Nitroso Compounds as Cathode Materials 619
Glicksman, R., and Morehouse, C. K.—Dry Cells Containing Various Aromatic Nitro Compounds as Cathode Materials 306
Glicksman, R., and Morehouse, C. K.—Investigation of Electrochemical Characteristics of Organic Compounds, II. Aromatic Nitroso Compounds 613
Glicksman, R., and Morehouse, C. K.—Investigation of the Electrochemical Properties of Organic Compounds, I. Aromatic Nitro Compounds 299
Glicksman, M., and Weiser, K.—Electron Mobility in InP 728
Godard, H. P., and Aziz, P. M.—Influence of Surface Pretreatment on the Atmospheric Oxidation of 2S(U.S. Alloy 1100) Aluminum (D) 367
Goering, H. L., *et al.*—Preparation and Some Characteristics of Single-Crystal Indium Phosphide 731
Gonzalez, R. E., and Lesk, I. A.—Selective Electrolytic Etching of Germanium and Silicon Junction Transistor Structures 469
Goode, W. D., *et al.*—Equilibria in the Niobium-Hydrogen System 219
Goode, W. D., *et al.*—Equilibria in the Niobium-Hydrogen System (D) 756
Grace, R. E., and Seybolt, A. U.—Selective Oxidation of Al from an Al-Fe Alloy 582
Graff, W. S., and Stadelmaier, H. H.—Higher Oxides of Silver 446
Graham, P. R., *et al.*—Electrolytic Production of Sodium Perchlorate Using Lead Dioxide Anodes

151
Greenblatt, J. H.—Letter to Editor 97C
Griffis, R. C.—Equilibrium Reduction of Tungsten Dioxide by Hydrogen 398
Grigger, J. C., *et al.*—Lead Dioxide Anode for Commercial Use 100
Grjotheim, K. (D) 364
Gulbransen, E. A., and Andrew, K. F.—High Temperature Oxidation of High Purity Nickel between 750° and 1050°C (D) 363
Gulbransen, E. A., and Andrew, K. F.—Oxidation of Niobium between 375°C and 700°C 4
Gulbransen, E. A., and Katz, O. M.—Equilibria in the Niobium-Hydrogen System (D) 756

Haberecht, R. R., *et al.*—Preparation and Properties of Aluminum Antimonide 533
Hackerman, N.—On Research—Its Care and Nourishment (Presidential Address) 119C
Hackerman, N., and Kaesche, H.—Corrosion Inhibition by Organic Amines 191
Hackerman, N., and Makrides, A. C.—Dissolution of Metals in Aqueous Acid Solutions, II. Depolarized Dissolution of Mild Steel 156
Hadley, C. P., *et al.*—Study of the Molded Nickel Cathode 395
Hall E. H., and Blocher, J. M., Jr.—Heat of Formation of Titanium Tribromide by the Mercury Reduction of Titanium Tetrabromide 40
Hall, E. H., *et al.*—Vapor Pressure of Titanium Tetrabromide 271
Hall, E. H., *et al.*—Vapor Pressure of Titanium Tetrafluoride 275
Hamilton, D. R.—Preparation of Crystals of Pure Hexagonal SiC 735
Harman, T. C., *et al.*—Preparation and Some Characteristics of Single-Crystal Indium Phosphide 731
Harr, C. R., and Shafer, W. M.—Electrolytic Iron Powders—Production and Properties 413
Harrison, D. E., and Hummel, F. A.—Calcium- Silicate- Tungstale Phosphor 34
Harteck, P.—Karl Friedrich Bonhoeffer—Palladium Medal Presentation 75C
Harvey, W. W., and Gatos, H. C.—Reaction of Germanium with Aqueous Solutions, I. Dissolution Kinetics in Water Containing Dissolved Oxygen 654
Hazel, J. F., and Fiorito, L.—Sedimentation Volumes of a Phosphor Powder in Potassium Silicate and Potassium Silicate-Barium Acetate Settling Medium 57
Herasymenko, P., and Komarek, K.—Equilibria between Titanium Metal and Solutions of Titanium Dichloride in Fused Magnesium Chloride 210
Herasymenko, P., and Komarek, K.—Equilibria between Titanium Metal and Solutions of Titanium Dichloride in Fused Sodium Chloride 216
Herczog, A., *et al.*—Preparation and Properties of Aluminum Antimonide 533
Hickling, A., and Denaro, A. R.—Glow-Discharge Electrolysis in Aqueous Solutions 265
Higgins, W. E. (D) 757
Hill, D. G., *et al.*—Electrochemical Measurement of Oxide Formation 408
Hill, G. R., and Smith, T.—Reaction Rate Study of the Corrosion of Low-Hafnium Zirconium in Aqueous Hydrofluoric Acid Solutions 117
Hiller, M. A., *et al.*—Methods for Preparing Pure Scandium Oxide 683
Hoare, J. P., and Schuldiner, S.—Mechanisms of Hydrogen Producing Reactions on Palladium, V. The Deuterium-Palladium System 278
Hoey, G. R., and Cohen, M.—Corrosion of Anodically and Cathodically Polarized Magnesium in Aqueous Media 245
Hoey, G. R., and Cohen, M.—Corrosion of Anodically and Cathodically Polarized Magnesium in Aqueous Media (D) 757
Hogan, R. J., *et al.*—Action of Lead Pigments and Lead Soaps on Aluminum 9
Hogan, R. J., *et al.*—Action of Lead Pigments and Lead Soaps on Aluminum (D) 754
Holmes, G. T., and Stern, H.—Mechanism of Anode Thermal Reaction in Aluminum Reduction Cells 478
Holt, M. L., and Ernst, D. W.—Cathode Potentials during the Electrodeposition of Molybdenum Alloys from Aqueous Solutions 686
Horn, F. H.—Melted Layer Crystal Growth and Its Application to Germanium 393
Horn, F. H., and Taft, E. A.—Zone Purification of Silicon 81
Hummel, F. A., and Harrison, D. E.—Calcium-Silicate-Tungstate Phosphor 34
Hummel, F. A., and Katnack, F. L.—Phase Equilibria and Fluorescence in a Portion of the System $ZnO-MnO-P_2O_5$ 528
Hummel, F. A., and Katnack, F. L.—Phase Equilibria in the System $ZnO-P_2O_5$ 125

Ibl, N., and Müller, R. H.—Studies of Natural Convection at Vertical Electrodes 346
Ichikawa, E., *et al.*—Electrolytic Reduction of Cyanamide, II. The Nature of the Reduction of Cyanamide and Formamidine 598
Ilschner-Gensch, C.—Local Cell Action During the Scaling of Metals, II. (1) 635
Ilschner-Gensch, C., and Wagner, C.—Local Cell Action during the Scaling of Metals, I 198

Javes, J. G., and Schnable, G. L.—Fused Bath for Electrodeposition of Molten Cadmium-Indium Alloy 84
John, H. F.—Properties of Some Germanium Single Crystals Grown from Solutions of Molten Metals 741
Johnson, R. S., *et al.*—Cathode Reactions in the Leclanche Dry Cell 296
Jones, J. L., and Arranaga, A. B.—A New Zinc-Iodate Primary Battery 435
Jones, R. O., and Rothschild, S.—Lead Oxide-Lead Sulfate and Lead Oxide-Lead Selenate Systems 206
Jones, S.—Calcium-Silicate-Tungstate Phosphor; Preparation and Physical Properties 37

Kabasakalian, P., and McGlotten, J.—Polarographic Reduction of Delta⁴-3-Ketosteroids in Well-Buffered Media 261
Kabasakalian, P., and McGlotten, J.—Polarographic Reduction of Delta⁴-3-Ketosteroids in Well-Buffered Media (D) 758
Kaesche, H., and Hackerman, N.—Corrosion Inhibition by Organic Amines 191
Karas, H. R., and Schaefer, J. F. (D) 761
Katnack, F. L., and Hummel, F. A.—Phase Equilibria and Fluorescence in a Portion of the System $ZnO-MnO-P_2O_5$ 528
Katnack, F. L., and Hummel, F. A.—Phase Equilibria in the System $ZnO-P_2O_5$ 125
Katz, O. M., and Gulbransen, E. A.—Equilibria in the Niobium-Hydrogen System (D) 756
Keck, P. H., *et al.*—Sensitive Method for Measuring Optical Scattering in Silicon 706
Keir, D. S., and Pryor, M. J.—Galvanic Corrosion, II. Effect of pH and Dissolved Oxygen Concentration on the Aluminum-Steel Couple 629
Kellogg, H. H., and Kreye, W. C.—Equilibrium between Titanium Metal, $TiCl_3$, and $TiCl_2$ in NaCl-KCl Melts (D) 364
Kent, J. H.—Measurement of Magnetic Fields in Aluminum Reduction Furnaces 603
King, C. V.—Anniversary Greetings to AES (E) 247C
King, C. V.—Automatic Cathodic Protection (E) 17C
King, C. V.—"Brief Communications" (E) 116C
King, C. V.—Educational Standards (E) 35C
King, C. V.—Electrochemistry in Japan (E) 224C
King, C. V.—Russian Literature (E) 90C
King, C. V.—Of Satellites and of Men (E) 4C
King, C. V.—The Editor Makes Mistakes (E) 104C
King, C. V.—University Teaching and Research (E) 206C
Komarek, K., and Herasymenko, P.—Equilibria between Titanium Metal and Solutions of Titanium Dichloride in Fused Magnesium Chloride 210
Komarek, K., and Herasymenko, P.—Equilibria between Titanium Metal and Solutions of Titanium Dichloride in Fused Sodium Chloride 217
Korver, M. P., and Cahoon, N. C.—Film Lining for High-Capacity Dry Cells 293
Korver, M. P., *et al.*—Cathode Reactions in the Leclanche Dry Cell 296
Kotb, H., *et al.*—Anodic Oxidation of Zinc and Zinc-Tin Alloys at Very Low Current Density 47
Kozawa, A., and Vosburgh, W. C.—Analysis of Manganese Dioxide with Special Reference to Electrodeposited Oxide on Graphite 235
Kozawa, A., and Vosburgh, W. C.—Relation of the Conditions of Electrodeposition of Manganese

Dioxide to the Discharge Characteristics 59
Kozawa, A., *et al.*—Formation of Manganese (II) Ion in the Discharge of the Manganese Dioxide Electrode, II. Effect of Volume and pH of Electrolyte 1
Kreye, W. C., and Kellogg, H. H.—Equilibrium between Titanium Metal, $TiCl_2$, and $TiCl_3$ in NaCl-KCl Melts (D) 364
Krohn, A., and Case, L. O.—Electrodeposition of Iron-Molybdenum Alloys 512
Ku, S. M., *et al.*—Some Semiconducting Properties of HgTe 723
Laity, R. W., and Duke, F. R.—Transport Numbers in Pure Fused Salts; Lead Chloride, Lead Bromide, Thallous Chloride, and Silver Nitrate 97
Lake, P. E., and Casey, E. J.—Anodic Oxidation of Cadmium, I. Mechanism of Film Formation 52
Lambert, R. H., and Trevoy, D. J.—Analysis of Films on Copper by Coulometric Reduction 18
Lander, J. J. (D) 361
Lander, J. J.—Silver, Cobalt, and Positive-Grid Corrosion in the Lead-Acid Battery 289
Lander, J. J.—Silver, Cobalt, and Positive-Grid Corrosion in the Lead-Acid Battery (D) 761
Lander, J. J., and Morrison, J.—Concentration of Hydrogen in Nickel under Hydrogen Ion Bombardment 145
Lange, E., and Van Rysselberghe, P.—Fundamentals of the Theory of Electrodes and Galvanic Cells 420
Leach, R.—Energy Transfer and Sensitization in Single Crystal Phosphors 27
Lee, T. S., *et al.*—Anodic Oxide Film Formation on Zirconium Kinetics with and without Concurrent Oxygen Evolution 660
Lehmann, W.—Particle Size and Efficiency of Electroluminescent Zinc Sulfide Phosphors 585
Lesk, I. A., and Gonzalez, R. E.—Selective Electrolytic Etching of Germanium and Silicon Junction Transistor Structures 469
Lewis, J. E., and Plumb, R. C.—Studies of the Anodic Behavior of Aluminum, I. The Direction of Ionic Movement 496
Lincoln, J., Jr., and Uhlig, H. H.—Chemical Factors Affecting Stress Corrosion Cracking of 18-8 Stainless Steels 325
Linnenbom, V. J.—Reaction between Iron and Water in the Absence of Oxygen 322
Loomis, F. D., *et al.*—Lead Dioxide Anode for Commercial Use 100
Low, M. J. D.—Enhanced Surface Reactions, II. Oxygen Adsorption on Several Metals 103
Lowenheim, F. A.—April 27-May 1, 1958 (E) 71C
Lowenheim, F. A., *et al.*—Protective Value of Tin-Nickel Alloy Deposits on Steel 338
Lynds, L., and Stern, D. R.—High-Purity Crystalline Boron 676
MacMullin, R. B., and Cole, J. C.—Report of the Chlor-Alkali Committee of the Industrial Electrolytic Division for the Year 1957 550
Makrides, A. C.—Stoichiometric Numbers and Hydrogen Overpotential (D) 366
Makrides, A. C., and Hackerman, N.—Dissolution of Metals in Aqueous Acid Solutions, II. Depolarized Dissolution of Mild Steel 156
Mallett, M. W., and Albrecht, W. M.—Reaction of Hydrogen with Uranium 610
Mallett, M. W., *et al.*—Equilibria in the Niobium-Hydrogen System 219
Mallett, M. W., *et al.*—Equilibria in the Niobium-Hydrogen System (D) 756
Mason, D. R., and Sarace, J. C.—Bonding Materials for Making Contacts to p-Type Silicon 594
McGlotten, J., and Kabasakalian, P.—Polarographic Reduction of Delta'-3-Ketosteroids in Well-Buffered Media 261
McGlotten, J., and Kabasakalian, P.—Polarographic Reduction of Delta'-3-Ketosteroids in Well-Buffered Media (D) 758
McGraw, L. D., and Tripler, A. B., Jr.—Investigation of Some New Cathode Depolarizer Materials 179
McKeag, A. H.—Temperature Characteristics of Barium Strontium Lithium Silicate Phosphors 78
McKim, F. S., and Buck, T. M.—Effects of Certain Chemical Treatments and Ambient Atmospheres on Surface Properties of Silicon 709
McNeill, W.—Preparation of Cadmium Niobate by an Anodic Spark Reaction 544
Medcalf, W. E., and Fahrig, R. H.—High-Pressure, High-Temperature Growth of Cadmium Sulfide Crystals 719
Mellors, G. W., and Senderoff, S.—Electromotive Force Measurements in Cerium-Cerium Chloride Liquid Systems 224
Mellors, G. W., *et al.*—Study of the Effect of Chloride Ion on Films Formed on Iron in Sodium Nitrite Solutions 332
Middleton, A. E., *et al.*—Preparation and Properties of Aluminum Antimonide 533
Mies, F., and Salzberg, H. W.—Cathodic Disintegration of Tin 64
Miller, H. C., *et al.*—Lead Dioxide Anode for Commercial Use 100
Minden, H. T., *et al.*—Some Semiconducting Properties of HgTe 723
Mooney, R. W.—Temperature Dependence of Fluorescence of Tin-Activated Orthophosphates 456
Morehead, F. F., Jr.—Electron Traps and the Electroluminescence Brightness and Brightness Waveform 461
Morehouse, C. K., and Glicksman, R.—Dry Cells Containing Various Aromatic C-Nitroso Compounds as Cathode Materials 619
Morehouse, C. K., and Glicksman, R.—Dry Cells Containing Various Aromatic Nitro Compounds as Cathode Materials 306
Morehouse, C. K., and Glicksman, R.—Investigation of Electrochemical Characteristics of Organic Compounds, II. Aromatic Nitroso Compounds 615
Morehouse, C. K., and Glicksman, R.—Investigation of Electrochemical Properties of Organic Compounds I. Aromatic Nitro Compounds 299
Morrison, J., and Lander, J. J.—Concentration of Hydrogen in Nickel under Hydrogen Ion Bombardment 145
Mortimer, G.—Use of Bismuth as a Donor-Type Impurity in Germanium Single Crystals 739
Mrowec, S., and Werber, T. (D) 363
Müller, R. H., and Ibl, N.—Studies of Natural Convection at Vertical Electrodes 346
Niedrach, L. W., and Dearing, B. E.—Preparation of Uranium Metal by the Electrolytic Reduction of Its Oxides 353
Nole, V. F., *et al.*—Investigation of Chemical Variables Affecting the Corrosion of Copper 569
Nowotny, H., *et al.*—Preparation and Identification of the Thorium Germanides 473
Nozaki, N., and Okubo, H.—Grain Growth and Flecking in Electroplated Copper Caused by Cyclic Stress 384
Odo, K., *et al.*—Electrolytic Reduction of Cyanamide, II. The Nature of the Reduction of Cyanamide and Formamidine 598
Okubo, H., and Nozaki, N.—Grain Growth and Flecking in Electroplated Copper Caused by Cyclic Stress 384
Owens, B., and Duke, F. R.,—Mobilities of the Ions in Fused KNO_3-$AgNO_3$ Mixtures 476
Owens, B., and Duke, F. R.,—Transport Numbers of the Pure Fused Salts, $LiNO_3$, $NaNO_3$, KNO_3, and $AgNO_3$ 548
Paris, B., *et al.*—Zone Melting and Crystal Pulling Experiments with AlSb 93
Parsons, R. (D) 366
Patten, F. B., *et al.*— Action of Lead Pigments and Lead Soaps on Aluminum 9
Patten, F. B., *et al.*— Action of Lead Pigments and Lead Soaps on Aluminum (D) 754
Payne, P. D., Jr., and Sadowsky, M.—Photodeposition of Luminescent Screens 105
Pemsler, J. P.—Diffusion of Oxygen in Zirconium and Its Relation to Oxidation and Corrosion 315
Pemsler, J. P.—Diffusion of Oxygen in Zirconium and Its Relation to Oxidation and Corrosion (D) 761
Pentland, N., *et al.*—Hydrogen Evolution Reaction on Copper, Gold, Molybdenum, Palladium, Rhodium, and Iron; Mechanism and Measurement Technique under High Purity Conditions (D) 752
Piontelli, R., *et al.* (D) 752
Pitman, A. L., *et al.*—Potential-pH Diagram of the Antimony-Water System; Its Application to Properties of the Metal, Its Compounds, Its Corrosion, and Antimony Electrodes (D) 365
Plumb, R. C. (D) 367
Plumb, R. C.—Studies of the Anodic Behavior of Aluminum, II. Cou-

lometry of Barrier Layer Production 498
Plumb, R. C.—Studies of the Anodic Behavior of Aluminum III. The Specific Surface Area of Aluminum with Variable Resolution from 20Å to 1000Å 502
Plumb, R. C., and Lewis, J. R.—Studies of the Anodic Behavior of Aluminum, I. The Direction of Ionic Movement 496
Poli, G., *et al.* (D) 752
Porter, B., *et al.*—Electrochemical Measurement of Oxide Formation 408
Potter, R. M., and Aven, M. H.—Luminescence of Self-Coactivated ZnS:Cu 134
Potts, J. M., *et al.*—Iron and Phosphate Slag from Byproduct Ferrophosphorous 148
Pourbaix, M., *et al.*—Potential-pH Diagram of the Antimony-Water System; Its Applications to Properties of the Metal, Its Compounds, Its Corrosion, and Antimony Electrodes (D) 365
Powell, J. E., *et al.*—Methods for Preparing Pure Scandium Oxide 683
Powell, V. J., and Allen, M. J.—Anodic Polarography with a Rotating Platinum Microelectrode, II. Oxidation of Various Indole Alkaloids 541
Pribble, M. J., *et al.*—Formation of Manganese (II) Ion in the Discharge of the Manganese Dioxide Electrode, II. Effect of Volume and pH of Electrolyte 1
Pryor, M. J., and Keir, D. S.—Galvanic Corrosion, II. Effect of pH and Dissolved Oxygen Concentration on the Aluminum-Steel Couple 629
Pryor, M. J., *et al.*—Action of Lead Pigments and Lead Soaps on Aluminum 9
Pryor, M. J., *et al.*—Action of Lead Pigments and Lead Soaps on Aluminum (D) 754

Ramsey, J. B.—Potential of an Electrode of a Voltaic Cell; A New Definition with Justification for the Use of Two Sign Conventions (D) 359
Roberts, R.—Fuel Cell Round Table 428
Robertson, W. D., *et al.*—Investigation of Chemical Variables Affecting the Corrosion of Copper 569
Rothschild, S., and Jones, R. O.—Lead Oxide-Lead Sulfate and Lead Oxide-Lead Selenate Systems 206
Rudy, W. G., *et al.*—Study of the Molded Nickel Cathode 395
Rüetschi, P., and Angstadt, R. T.—Self-Discharge Reactions in Lead-Acid Batteries 555
Rüetschi, P., and Cahan, B. D.—Anodic Corrosion and Hydrogen and Oxygen Overvoltage on Lead and Lead Antimony Alloys (D) 360
Rüetschi, P., and Cahan, B. D.—Electrochemical Properties of PbO_2 and the Anodic Corrosion of Lead and Lead Alloys 369

Sadowsky, M., and Payne, P. D., Jr.—Photodeposition of Luminescent Screens 105
Salatka, J. W., and Comenetz, G.—Ten-Gram Levitation-Melted Ingots 673
Salzberg, H. W., and Mies, F.—Cathodic Disintegration of Tin 64
Sam, A., *et al.*—Formation of Manganese (II) Ion in the Discharge of the Manganese Dioxide Electrode, II. Effect of Volume and pH of Electrolyte 1
Samans, C. H., and Dravnieks, A.—Kinetics of Reaction of Steel with Hydrogen Sulfide-Hydrogen Mixtures 183
Sams, J. F., and Dittmann, J. F.—Lead-Acid Storage Batteries Changes in Positive Active Material Density During Various Conditions of Service 553
Sarace, J. C., and Mason, D. R.—Bonding Materials for Making Contacts to p-Type Silicon 594
Schaefer, J. F., and Karas, H. R. (D) 761
Schnable, G. L., and Javes, J. G.—Fused Bath for Electrodeposition of Molten Cadmium-Indium Alloy 84
Schram, A. F., and Burns, L. R.—Effect of Amines on Polarization of Iron Electrodes 241
Schuldiner, S., and Hoare, J. P.—Mechanisms of Hydrogen Producing Reactions on Palladium, V. The Deuterium-Palladium System 278
Schumacher, J. C., *et al.*—Electrolytic Production of Sodium Perchlorate Using Lead Dioxide Anodes 151
Schwuttke, G. H., *et al.*—Sensitive Method for Measuring Optical Scattering in Silicon 706
Scott, W. C., Jr., *et al.*—Iron and Phosphate Slag from Byproduct Ferrophosphorus 148
Searcy, A. W., *et al.*—Preparation and Identification of the Thorium Germanides 473
Seed, R. G., and Cline, J. E.—Diffusion into Silicon from Glassy Layers 700
Sellers, W. W., *et al.*—Protective Value of Tin-Nickel Alloy Deposits on Steel 338
Senderoff, S., and Mellors, G. W.—Electromotive Force Measurements in Cerium-Cerium Chloride Liquid Systems 224
Serfass, E. J., and Achey, F. A.—New Approach to the Measurement of Coating Thickness by Fluorescent X-Ray Absorption 204
Serravalle, G., *et al.* (D) 752
Seybolt, A. U., and Grace, R. E.—Selective Oxidation of Al from an Al-Fe Alloy 582
Shafer, W. M., and Harr, C. R.—Electrolytic Iron Powders—Production and Properties 413
Shams El Din, A. M., *et al.*—Anodic Oxidation of Zinc and Zinc-Tin Alloys at Very Low Current Density 47
Shapiro, H., *et al.*—Protection of Molybdenum from Oxidation at Elevated Temperatures 450
Shapiro, H., *et al.*—The Use of Nickel-Aluminum Alloy Coatings for the Protection of Molybdenum from Oxidation 485
Shearer, R. E., and Werner, R. C.—Thermally Regenerative Ionic Hydride Galvanic Cell 693
Sheldon, E., *et al.*—Hydrogen Evolution Reaction on Copper, Gold, Molybdenum, Palladium, Rhodium, and Iron; Mechanism and Measurement Technique under High Purity Conditions 752
Sherfey, J. M., and Brenner, A.—Electrochemical Calorimetry 665
Shibasaki, Y.—Textures of Electrodeposited Lead Dioxide 624
Shimogai, K., *et al.*—Electrolytic Reduction of Cyanamide, II. The Nature of the Reduction of Cyanamide and Formamidine 598
Silverman, S. J., and Benn, D. R.—Junction Delineation in Silicon by Gold Chemiplating 170
Silverman, S. J., and Singleton, J. B.—Technique for Preserving Lifetime in Diffused Silicon 591
Silvester, D. R., and Wanklyn, J. N.—A Study of Corrosion Films on Zirconium and Its Alloys by Impedance Measurements 647
Singleton, J. B., and Silverman, S. J.—Technique for Preserving Lifetime in Diffused Silicon 591
Smeltzer, W. W.—Oxidation of an Aluminum-3 Per Cent Magnesium Alloy in the Temperature Range 200°-550°C 67
Smith, G. P., *et al.*—The Microtopography of Oxide Films on Niobium 442
Smith, R. W., *et al.*—Kinetics of the Thiosulfate-Bromoacetate Reaction in the Presence of Electrolytes 229
Smith, T., and Hill, G. R.—Reaction Rate Study of the Corrosion of Low-Hafnium Zirconium in Aqueous Hydrofluoric Acid Solutions 117
Spedding, F. H., *et al.*—Methods for Preparing Pure Scandium Oxide 683
Spiro, M.—Letter to Editor 113C
Stadelmaier, H. H., and Graff, W. S.—Higher Oxides of Silver 446
Staley, H. G., and Svec, H. J.—Metal-Water Reactions, VI. Kinetics of the Reactions of Water Vapor with Strontium and Barium 121
Stephens, H. L., *et al.*—Kinetics of the Thiosulfate-Bromoacetate Reactions in the Presence of Electrolytes 229
Stern, D. R., and Lynds, L.—High-Purity Crystalline Boron 676
Stern, D. R., *et al.*—Electrolytic Production of Sodium Perchlorate Using Lead Dioxide Anodes 151
Stern, H., and Holmes, G. T.—Mechanism of Anode Thermal Reaction in Aluminum Reduction Cells 478
Stern, M.—Mechanism of Passivating-Type Inhibitors 638
Stoeckert, A. J., *et al.*—Study of the Molded Nickel Cathode 395
Straumanis, M. E.—Uncommon Valency Ions and the Difference Effect 284
Struthers, J. D., and Bemski, G.—Gold in Silicon 588
Sugino, K., *et al.*—Electrolytic Reduction of Cyanamide, II. The Nature of the Reduction of Cyanamide and Formamidine 598
Suiter, J. W.—Pressure Distribution within a Vacuum Arc Furnace 44
Svec, H. J., and Staley, H. G.—Metal-Water Reactions, VI. Kinetics of the Reactions of Water Vapor with Strontium and Borium 121

Taft, E. A., and Horn, F. H.—Zone Purification of Silicon 81
Talboom, F. P., Jr., *et al.*—Investigation of Chemical Variables Affecting the Corrosion of Copper 569

Taylor, J. K., *et al.*—Protection of Molybdenum from Oxidation at Elevated Temperatures 450
Tharp, A. G., *et al.*—Preparation and Identification of the Thorium Germanides 473
Tregallas-Williams, J.—Review of the Measurement of the Quantum Efficiency of Inorganic Phosphors 173
Trevoy, D. J., and Lambert, R. H.—Analysis of Films on Copper by Coulometric Reduction 18
Tripler, A. B., Jr., and McGraw, L. D.—Investigation of Some New Cathode Depolarizer Material 179
Turner, D. R—Electropolishing Silicon in Hydrofluoric Acid Solutions 402
Turnley, W. S., *et al.*—Destruction of Cyanide Wastes by Electrolytic Chlorination 607
Tytell, B. H.—Letter to Editor 113C

Uhlig, H. H., and Lincoln, J., Jr.—Chemical Factors Affecting Stress Corrosion Cracking of 18-8 Stainless Steels 325

Van Rysselberghe, P., and Lange, E.—Fundamentals of the Theory of Electrodes and Galvanic Cells 420
Van Rysselberghe, P., *et al.*—Anodic Oxide Film Formation on Zirconium Kinetics with and without Concurrent Oxygen Evolution 660
Vermilyea, D. A. (D) 754
Vermilyea, D. A.—Nature of Anode Slime 547
Vermilyea, D. A.—Technique for Purifying Electrolytic Solutions 286
Vosburgh, W. C., and Kozawa, A.—Analysis of Manganese Dioxide with Special Reference to Electrodeposited Oxide on Graphite 235
Vosburgh, W. C., and Kozawa, A.—Relation of the Conditions of Electrodeposition of Manganese Dioxide to the Discharge Characteristics 59
Vosburgh, W. C., *et al.*—Formation of Manganese (II) Ion in the Discharge of the Manganese Dioxide Electrode, II. Effect of Volume and pH of Electrolyte 1

Wachtel, A.—Effect of Impurities on the Plaque Brightness of a 3000°K Calcium Halophosphate Phosphor 256
Wachtel, A.—ZnS:Sn, Li Phosphor 432
Wagner, C., and Ilschner-Gensch, C.—Local Cell Action during the Scaling of Metals, I. 198
Wanklyn, J. N., and Silvester, D. R.—Study of Corrosion Films on Zirconium and Its Alloys by Impedance Measurements 647
Waring, W.—Diffusion Concentration Profiles by Analog Computation 702
Weininger, J. L.—Halogen-Activated Solid Electrolyte Cell 439
Weininger, J. L.—Room Temperature Tarnishing of Silver in Bromine and Iodine 577
Weinreich, O. A., *et al.*—Sensitive Method for Measuring Optical Scattering in Silicon 706
Weiser, K., and Glicksman, M.—Electron Mobility in InP 728
Werber, T., and Mrowec, S. (D) 363
Werner, R. C., and Shearer, R. E.—Thermally Regenerative Ionic Hydride Galvanic Cell 693
Wilbanks, J. A., *et al.*—Iron and Phosphate Slag from Byproduct Ferrophosphorus 148
Wilson, C. L.—Letter to Editor 179C
Winterbottom, A. B. (D) 365
Wleügel, J., and Böckman, O. C.—Electromagnetic Forces in Large Aluminum Furnaces 417
Wolf, I., and Felmayer, W.—Conductivity and Energy Gap Measurements of Some Relatives of Phthalocyanine 141
Wolk, B.—Relationship between Thermal Decomposition in Vacuum and the Macrostructure of Alkaline Earth Carbonates 89

Yannakopoulos, T., and Brenner, A.—Isolation of the Diffusion Layer at an Electrode and the Determination of Concentration Polarization 521
Young, L. (D) 761

Zuman, P. (D) 758

Subject Index (Vol. 105, 1958)

Following an item, (E) indicates an editorial, and (D) indicates discussion of material published in preceding volume of the JOURNAL

Alkaloid. Anodic oxidation, 541
Alloy
  Aluminum-Copper. Stress corrosion, 377
  Aluminum-magnesium. Oxidation, 67
  Aluminum-nickel. Coating of molybdenum, 485
  Cadmium-indium, 84
  Iron-molybdenum. Electrodeposition, 512
  Lead. Anodic corrosion, 369
  Molybdenum. Electrodeposition, 686
  Nickel-tin. Electroplating, 332
  Tin. *See* Zinc-tin, *below*
  Zinc-tin, 47
Aluminum
  Anodic behavior, 496, 498, 502
  Corrosion by lead pigments (D), 754
  Oxidation. Aluminum-iron alloy, 582
  Oxidation. Effect of surface pretreatment (D), 367
Aluminum antimonide.
  Preparation and properties, 533
  Zone melting, 93
Aluminum furnace
  Electromagnetic forces in, 417
  Measurement of magnetic fields, 603
  Thermal reaction at anode, 478
American Electroplaters' Society
  Award to William Blum, 175C
  Fiftieth anniversary, 247C
Amines. Influence on polarization of iron electrodes, 241
Analog computer. Study of diffusion processes, 702
Anode
  Glow-discharge, 265
Anode—*contd.*
  Indium, 239
  Lead dioxide, 100
  Production of sodium perchlorate, 151
  Magnesium, 306
Anode slime on silver, 547
Antimony-water system. Potential pH equilibrium diagram (D), 365
Argentic oxide, 446

Barium. Reaction with water vapor, 121
Bismuth. Impurity in germanium crystals, 739
Book reviews, 12C, 26C, 66C, 84C, 111C, 133C, 196C, 216C, 258C
Borate melt. Layer on nickel, silver, gold and platinum, 635
Boron
  Diffusion into silicon, 700
  Production from boron trichloride, 676
Bromine. Tarnishing of silver, 577
Bromoacetate. Reaction with thiosulfate, 229
Buffering. *See* Polarographic reduction

Cadmium niobate. Preparation, 544
Cadmium sulfide. Crystalline, 719
Calcium. Reaction with water vapor, 121
Calorimeter. Construction, 670
Calorimetry. Measurement of electrochemical processes, 665
Cathode
  Aromatic C-nitroso compounds, 619
  Depolarizer, 179
  Disintegration of tin, 64
Cathode—*contd.*
  Molded nickel, 395
  Organic materials, 306
  Reactions in Leclanché cell, 296
Cathode potential. Measurement in electrodeposition, 686
Cell. *See* Dry cell. Electric cell. Full Cell. Galvanic cell. Voltaic cell
Ceramic coatings. Electrical resistivity vs. thickness, 201
Cerium. Activation of phosphors, 78
Cerium-cerium chloride. Electromotive force, 224
Chloride ion. Effect on iron in sodium nitrite solution, 332
Chlorination. Treatment of cyanide waste, 607
Coatings. *See* Ceramic coatings. Protective coatings.
Cobalt. Influence on grid corrosion in electric battery, 289, (D) 761
Concentration gradients at an anode, 506
Concentration polarization, 521
Conductivity. Silver nitrate and potassium nitrate mixtures, 412, 476
Convection, 109
  At vertical electrodes, 346
Conventions (E), 71C
Copper
  Anodic behavior in hydrochloric acid, 109
  Corrosion, 569
Corrosion
  All Union Scientific-Technical Conference on Corrosion and Protection of Metals, 228C
  Aluminum, 9
  Anodic
    Lead and lead alloys, 369
    Lead and lead-antimony al-

Corrosion—*contd.*
loys (D), 360
Cathodic protection (E),17C
Cell action in scaling of metals, 198
Copper, 569
Electric battery, 289
European Corrosion Federation Congress, 209C
Galvanic, 629
Magnesium electrode, 245
Nickel, 635
Zinc electrode, 311
Zirconium, 117, 315, 647, (D) 761
Corrosion inhibitor
Organic amines, 191
Passivating, 638
Coulometric reduction. Films on copper, 18
Crystal
Aluminum antimonide, 93
Cadmium sulfide, 719
Germanium, 739, 741
Growth by melted-layer method, 393
Indium phosphide, 731
Measurement of imperfections, 706
Silicon carbide, 735
Cyanamide. Electrolytic reduction, 598
Cyanide. Disposal of waste by chlorination, 607

Depolarizer. *See* Cathode
Deuterium-palladium system, 278
Diffusion
Concentration profiles, 702
Control in silicon, 695
Into silicon, 700
Diffusion layer. Isolation, 521
Dry cell
Cathode reactions, 296
See also Electric cell. Galvanic cell. Voltaic cell

Editorial errors (E), 104C
Education (E), 35C
Education vs. research (E), 206C
Electric cell
Halogen-activated, 439
Lead-acid. Grid corrosion, 289
Organic material as cathode, 299, 306, 619
Zinc-iodate, 435
See also Dry cell
Electric furnace
Pressure distribution in vacuum arc furnace, 44
See also Aluminum furnace
Electrochemical industry. Japan (E), 224C
Electrochemistry
Calorimetric study of processes, 665
Confusion in terminology, 420
Electrochemical Society
Abstracts of "Recent News" papers, 251C
Annual reports for 1957
Chlor-Alkali Committee, 550
Directors, 123C
Secretary, 127C
Awards
Acheson Medal to W. J. Kroll, 174C
Battery Division Research Award to J. J. Lander, 189C
Francis Mills Turner Memorial Award to A. C. Makrides, 175C
Palladium Medal to K. F. Bonhoeffer, 75C
Young Author's Prize to Paul Ruetschi, 175C
Conventions
New York, 7C, 19C, 76C
Program, 37C
Ottawa, 105C, 145C, (E) 184C, 187C, 256C-257C

Electrochemical Society—*contd.*
Directors' Meeting, 8C, 94C, 189C
Division news
Battery, 21C, 190C, 254C
Corrosion, 9C, 254C
Electric Insulation, 132C
Electrodeposition, 10C
Electronics, 80C
Electro-Organic, 76C
Electrothermics and Metallurgy, 79C, 173C, 213C
Theoretical Electrochemistry, 254C
Section news
Boston, 79C, 95C, 130C
Chicago, 10C
India, 21C, 80C, 131C, 212C
Indianapolis, 10C, 80C, 130C
Midland, 212C
Mohawk-Hudson, 21C, 96C, 212C, 255C
Ontario-Quebec, 21C, 96C, 131C
Philadelphia, 21C, 80C, 96C, 177C
Pittsburgh, 212C
San Francisco, 131C, 190C
Washington-Baltimore, 10C, 96C, 212C
Status of the Society, (E) 143C
Electrode
Diffusion layer, 521
Magnesium, 245
Manganese dioxide. Discharge, 1
Platinum, 483
Polarization of iron, 241
Saturation currents in germanium and silicon, 715
Stainless steel, 483
Theory, 420
See also Corrosion. Germanium
Electrodeposition
Cadmium-indium alloy, 84
Manganese dioxide, 59, 235
Molybdenum alloys, 698
Molybdenum-iron alloy, 512
Electroluminescence. *See* Luminescence. Phosphors
Electrolysis. Glow-discharge, 265
Electrolyte. Silver halide, 439
Electrolytic iron. Powder production, 413
Electromotive force. Measurement, 224
Electron trap. Influence on electroluminescence, 461
Electroplating
Aluminum, 24
Gauduin process, 24
Gram growth in copper, 384
Tin-nickel alloy on steel, 338
Electropolishing. Silicon in hydrofluoric acid solutions, 402
Errata, 109C, 433, 486
Etching, Electrolytic. Transistor structures, 469
European Corrosion Federation. Congress, 209C

Ferrophosphorus. Conversion to iron and phosphate slag, 148
Film
Analysis of films on copper, 18
Application to phosphor screens, 388
See also Oxide film
Fluorescence. Dependence on temperature, 456
Formamidine. Electrolytic reduction, 598
Fuel cell. Definitions and theory, 428
Furnace. *See* Aluminum furnace. Electric furnace

Galvanic cell
Lithium hydride, 693
Theory, 420
Galvanic corrosion. *See* Corrosion
Gamma irradiation. Effect on platinum and stainless steel electrodes, 483
Germanium
Bismuth as impurity in crystals, 739
Crystal growth, 393, 741
Dissolution in nitric acid, 487
Dissolution in water, 654
Electrode, 715
Electrolytic etching, 469
Measuring growth of films (D), 487
Passivity, 492
See also Thorium germanides
Gold
Introduced in heat treatment of silicon, 588
Plating for junction delineation in silicon, 170
See also Borate melt
Gordon Research Conference, 77C
Grain growth. Electroplated copper, 384

Hydrogen
Concentration in nickel under hydrogen-ion bombardment, 145
Diffusion through steel, 563
Reaction with uranium, 610
See also Tantalum
Hydrogen evolution. Reaction on various metals (D), 752
Hydrogen-niobium. *See* Niobium-hydrogen system
Hydrogen overpotential. Application of stoichiometric numbers (D), 366
Hydrogen sulfide. Reaction with steel, 183

Indium. Anode material, 239
Indium phosphide
Electrical properties, 734
Electron mobility, 728
Preparation, 731
Iodine. Tarnishing of silver, 577
Ions. Uncommon valency, 284
Iron
Production from byproduct ferrophosphorus, 148
Reaction with oxygen-free water, 322
See also Electrolytic iron
Japan. *See* Electrochemical industry

Lead
Action on aluminum, 9
Anodic corrosion, 369
Lead bromide. *See* Transport numbers
Lead chloride. *See* Transport numbers
Lead dioxide
Electrochemical properties, 369
Electrodeposited, 624
See also Anode
Lead oxide
Lead selenate compounds, 206
Lead sulfate compounds, 206
Lead selenate compounds. *See* Lead oxide
Lead sulfate compounds. *See* Lead oxide
Leclanché cell. *See* Dry cell
Levitation
Applications, 675
Materials melted, 674
Luminescence
Brightness affected by electron traps, 461
Phosphors, 134

Magnesium
Anode in dry cells, 306
Corrosion, 245, (D) 757
Magnesium chloride. Thermal analysis, 210
Manganese. Activation of phosphors, 78

Manganese dioxide. *See* Electrode. Electrodeposition
Max Planck Institut für Physik. Carl Wagner appointed Director, 7C
Mercuric telluride. Semiconducting properties, 723
Mercury reduction of titanium tetrabromide, 40
Metals
  Levitation melting. *See* Levitation
  Scaling, 198, 635
Microphotography. Oxide film on niobium, 442
Molybdenum
  Contacts to silicon, 594
  Electrodeposition of alloys, 686
  Protective coating on, 450, 483
  See also Alloy

Nickel
  Corrosion, 635
  Hydrogen ion bombardment, 145
  Oxidation at high temperature (D), 363
  See also Borate melt
Niobium
  Oxidation, 4, 442
  Oxide film, 442
Niobium-hydrogen system. Equilibria, 219, (D) 756
Nitric acid. Reaction with germanium, 487
Nitrogen. Interaction with tantalum, 574
Nitroso compounds. *See* Organic compounds

Organic compounds. Electrochemical characteristics, 613
Orthophosphates. Fluorescence, 456, 528
Oxidation
  Nickel at high temperature (D), 363
  Protection of molybdenum, 450
Oxidation, anodic
  Cadmium, 52
  Zinc and zinc-tin alloys, 47
Oxide film
  Cathodic reduction, 74
  Formation on zirconium, 660
  Iron. Effect of chloride ion, 332
  Niobium, 442
Oxide formation. Electrochemical measurement, 408
Oxygen
  Adsorption on metals, 103
  Diffusion in zirconium, 315, (D) 761
  See also Tantalum

Palladium
  Hydrogen-producing reactions, 278
  See also Deuterium-palladium system
Passivity
  Passivating inhibitors, 638
  Symposium, 20C
Phase equilibrium. Zinc compounds, 125, 528
Phosphors
  Calcium halophosphate, 256
  Calcium-silicate-tungstate, 34, 37
  Cerium activation, 78
  Deposition on luminescent screen, 105
  Energy transfer, 27
  Fluorescence. Dependence on temperature, 456
  Fog, 107
  Luminescence, 134
  Quantum efficiency, 173
  Sedimentation of powders for cathode screens, 57
  Temperature characteristics, 78
  Tin-activated orthophosphates, 456
Phosphors—*contd.*
  Zinc sulfide, 251, 432, 585
    Fired with copper, 134
    Fired with silver, 134
Phosphorus. Purification, 731
Phthalocyanine. Conductivity of various compounds, 141
Platinum. *See* Borate melt
Polarization. Iron electrodes, 241
Polarographic reduction. Buffering, 261, (D) 758
Polarography, anodic. Oxidation of alkaloids, 541
Potassium iodate. *See* Zinc-iodate *under* Electric cell
Potassium nitrate. *See* Conductivity
Potassium silicate solution. Sedimentation of phosphor powders, 57
Powder. *See* Electrolytic iron. Potassium silicate solution
Protective coatings
  Protection of molybdenum, 450, 485
  Thickness. X-ray measurement, 204
  Tin-nickel alloy, 338
  See also Ceramic coatings. Electroplating
Research, 119C
Research and teaching (E), 206C
Russian literature (E), 90C

Satellites (E), 4C
Scandium oxide. Preparation, 683
Schlieren optical studies, 506, 521
Screens. Aluminized for cathode-ray tubes, 388
Semiconductor
  Classification of compounds, 743
  See also Mercuric telluride. Silicon
Silicon
  Aluminum-clad, 597
  Bonding materials, 594
  Diffusion control, 695
  Diffusion of boron, 700
  Electrolytic etching, 469
  Electropolishing, 402
  Gold introduced in heat treatment, 588
  Junction analysis, 170
  Life, 591
  Measuring growth of films (D), 365
  Optical scattering. Measurement, 706
  Surface properties, 709
  Zone purification, 81
  See also Electrode
Silicon carbide. Crystal growth, 735
Silver
  Anode slime, 547
  Effect on grid corrosion in electric battery, 289, (D) 761
  Higher oxides, 446
  Tarnishing, 577
  See also Borate melt
Silver halide. *See* Electrolyte
Silver nitrate. *See* Conductivity. Transport numbers
Slag. Production from byproduct ferrophosphorus, 148
Sodium perchlorate. Production using lead dioxide anodes, 151
Sodium chloride. Thermal analysis, 216
Solutions. Electrolytic. Purification, 286
Sputnik. *See* Satellites
Stainless steel
  Corrosion inhibitor, 638
  Stress corrosion cracking, 325
  See also Electrode. Steel
Steel
  Diffusion of hydrogen, 563
  Reaction with hydrogen and hydrogen sulfide, 183
  Solution in dilute acid, 156
  See also Iron. Stainless steel
Steroids. Polarographic behavior, 261
Stoichiometric numbers (D), 366
Storage battery. Lead-acid
  Performance, 553
  Self discharge, 555
Stress. Cause of defects in electroplating, 384
Stress corrosion
  Aluminum-copper alloys, 377
  Stainless steel, 325
Strontium. Reaction with water vapor, 121
Sulfides, Ternary. Solid solutions with zinc sulfide, 251
Surface reaction. Adsorption of oxygen on metals, 103

Tantalum
  Interaction with oxygen, nitrogen and hydrogen, 574
  Oxidation, 71
Technical literature (E), 116C
Thallous chloride. *See* Transport numbers
Thiosulfate-bromoacetate reaction, 229
Thorium germanides. Identification, 473
Tin. Cathodic disintegration, 64
Titanium
  Anodic polarization, 162
  Equilibrium of dichloride and trichloride with metal (D), 364
  Equilibrium with titanium dichloride in magnesium chloride, 210
  Equilibrium with titanium dichloride in sodium chloride, 216
Titanium dichloride
  In manganese chloride, 210
  In sodium chloride, 216
Titanium tetrabromide
  Mercury reduction, 40
  Vapor pressure, 271
Titanium tetrafluoride. Vapor pressure, 275
Titanium tribromide. Heat of formation, 40
Transistor. Electrolytic etching, 469
Transport numbers. Fused lead chloride, lead bromide, thallous chloride, and silver nitrate, 97, 548
Tungsten dioxide. Equilibrium reduction by hydrogen, 398

United Engineering Center, 20C
Uranium
  Production by reduction of oxides, 353
  Reaction with hydrogen, 610

Valency. *See* Ions
Vapor pressure
  Titanium tetrabromide, 271
  Titanium tetrafluoride, 275
Voltaic cell. Potential (D), 359

Water. Reaction with iron in absence of oxygen, 322
Water vapor
  Reaction with barium, 121
  Reaction with calcium, 121
  Reaction with strontium, 121
Wollastonite, 34

X-ray. Measurement of coating thickness, 204

Zinc. Anodic oxidation, 47
Zinc compounds. Phase equilibrium, 125, 528
Zinc iodate battery. *See* Electric cell
Zinc sulfide. *See* Phosphors
Zirconium
  Corrosion, 117, 315, 647
  Oxide film formation, 660
  Oxygen diffusion, 315, (D) 761